

A. Permit Modification Certificate

**WASTEWATER REUSE PERMIT MODIFICATION
APPENDIX “D” TO PERMIT No. LA-000050-02**

**The Amalgamated Sugar Co., LLC, LOCATED AT 50 South 500
West, Paul, ID 83347 AND IN Township 9N, Range 23E, Sections 21,
22, 25, 26 & 27** IS HEREBY AUTHORIZED TO OPERATE THE
WASTEWATER REUSE SYSTEM IN ACCORDANCE WITH THE
WASTEWATER REUSE RULES (IDAPA 58.01.17) AND
WASTEWATER RULES (IDAPA 58.01.16), THE GROUND WATER
QUALITY RULE (IDAPA 58.01.11), AND ACCOMPANYING PERMIT
MODIFICATIONS, APPENDICES, AND REFERENCE DOCUMENTS.
THIS APPENDIX TO THE PERMIT IS INCORPORATED INTO AND
CONSTITUTES A PART OF PERMIT NO. LA-000050-02. THIS
APPENDIX MUST BE ATTACHED TO THE PERMIT. THE PERMIT
IS INCOMPLETE AND UNLAWFUL UNDER WASTEWATER REUSE
RULES WITHOUT THIS APPENDIX ATTACHED. THIS PERMIT IS
EFFECTIVE FROM THE DATE OF SIGNATURE.

Doug Howard, Regional Administrator
Idaho Department of Environmental Quality

Date signed:

**DEPARTMENT OF ENVIRONMENTAL QUALITY
1363 Fillmore Street
Twin Falls, ID, 83301**

POSTING ON SITE RECOMMENDED

B. Permit Contents, Appendices, and Reference Documents

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Appendices

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C. Abbreviations, Definitions

Ac-in	Acre-inch. The volume of water or wastewater to cover 1 acre of land to a depth of 1 inch. Equal to 27,154 gallons.
BMP or BMPs	Best Management Practices
COD	Chemical Oxygen Demand
DEQ or the Department	Idaho Department of Environmental Quality
Director	Director of the Idaho Department of Environmental Quality, or the Directors Designee, i.e. Regional Administrator
ET	Evapotranspiration – Loss of water from the soil and vegetation by evaporation and by plant uptake (transpiration)
GS	Growing Season – Typically April 01 through October 31 (214 days)
GW	Ground Water
GWQR	IDAPA 58.01.11 “Ground Water Quality Rule”
Guidance	Guidance for the Reclamation and Reuse of Municipal and Industrial Wastewater, DEQ
HLRgs	Growing Season Hydraulic Loading Rate. Includes any combination of wastewater and supplemental irrigation water applied to reuse hydraulic management units during the growing season. The HLRgs limit is specified in Section E. Permit Limits and Conditions.
HLRngs	Non-Growing Season Hydraulic Loading Rate. Includes any combination of wastewater and supplemental irrigation water applied to each hydraulic management unit during the non-growing season. The HLRngs limit is specified in Section E. Permit Limits and Conditions.
HMU	Hydraulic Management Unit (Serial Number designation is MU)
IWR	<p>Irrigation Water Requirement – Any combination of wastewater and supplemental irrigation water applied at rates commensurate to the moisture requirements of the crop, and calculated monthly during the growing season (GS). Calculation methodology for the IWR can be found at the following website: http://www.kimberly.uidaho.edu/water/appndxet/index.shtml. The equation used to calculate the IWR at this website is:</p> $IWR = (CU - P_e) / E_i$ <p>CU is the monthly consumptive use for a given crop in a given climatic area. CU is synonymous with crop evapotranspiration</p> <p>P_e is the effective precipitation. CU minus P_e is synonymous with the net irrigation requirement (IR)</p> <p>E_i is the irrigation system efficiency. To obtain the gross irrigation water requirement (IWR), divide the IR by the irrigation system efficiency.</p>
IDAPA	Idaho Administrative Procedures Act.
LG	Lagoon
lb/ac-day	Pounds (of constituent) per acre per day
MG	Million Gallons (1 MG = 36.827 acre-inches)
MGA	Million Gallons Annually (per WLAP Reporting Year)
NGS	Non-Growing Season – Typically November 01 through March 31 (151 days)
NVDS	Non-Volatile Dissolved Solids (= Total Dissolved Solids less Volatile Dissolved Solids)
O&M manual	Operation and Maintenance Manual, also referred to as the Plan of Operation
Reuse	The use of reclaimed wastewater for beneficial uses including, but not limited to, land treatment, irrigation, aquifer recharge, use in surface water features, toilet flushing in commercial buildings, dust control, and other uses.
Reuse Reporting Year	The reporting year begins with the non-growing season and extends through the growing season of the following year, typically November 01 – October 31. For example, the 2000 Reporting Year was November 01, 1999 through October 31, 2000.

C. Abbreviations, Definitions

SAR	Sodium Absorption Ratio
SI	Supplemental Irrigation water applied to the reuse treatment site.
Soil AWC	Soil Available Water Holding Capacity - the water storage capability of a soil to a depth at which plant roots will utilize (typically 60 inches or root limiting layer)
SMU	Soil Monitoring Unit (Serial Number designation is SU)
SW	Surface Water
TDS	Total Dissolved Solids or Total Filterable Residue
TDIS	Total Dissolved Inorganic Solids – The summation of chemical concentration results in mg/L for the following common ions: calcium, magnesium, potassium, sodium, chloride, sulfate, and 0.6 times alkalinity (alkalinity expressed as calcium carbonate). Nitrate, Silica and fluoride shall be included if present in significant quantities (i.e. > 5 mg/L each).
TMDL	Total Maximum Daily Load – The sum of the individual waste-load allocations (WLA's) for point sources, Load Allocations (LA's) for non-point sources, and natural background. Such load shall be established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. IDAPA 58.01.02 <i>Water Quality Standards and Wastewater Treatment Requirements</i>
Typical Crop Uptake	Typical Crop Uptake is defined as the median constituent crop uptake from the three (3) most recent years the crop has been grown. Typical Crop Uptake is determined for each hydraulic management unit. For new crops having less than three years of on-site crop uptake data, regional crop yield data and typical nutrient content values, or other values approved by DEQ may be used.
USGS	United States Geological Survey
WW	Wastewater applied to the reuse treatment site

D. Facility Information

Legal Name of Permittee	The Amalgamated Sugar Co LLC
Type of Wastewater	Sugar Beet Processing Wastewater
Method of Treatment	Slow Rate Land Application
Type of Facility	Sugar Processor
Facility Location	Paul, Idaho
County	Minidoka
Soils on Site	Paulville Loam & Clay Loam and Declo Loam
Depth to Ground Water	Perched Aquifer: 15 feet Regional Aquifer: 100 feet
Beneficial Uses of Ground Water	Domestic, Agriculture, Industrial, Aquaculture
Nearest Surface Water	Main Drain and "C" Canal
Beneficial Uses of Surface Water	Agricultural Water Supply, Industrial Water Supply
Responsible Official Mailing Address	Alan Hieb, Plant Manager P.O. Box 700 Paul, ID 83347
Phone / Fax	208.438.2115 / 208.438.7144

E. Compliance Schedule for Required Activities

The Activities in the following table shall be completed on or before the Completion Date unless modified by the Department in writing.

Compliance Activity Number Completion Date	Compliance Activity Description
CA-050-01M See Description for Completion Date	Determine and submit to DEQ for review and approval Soil Available Water Holding Capacity (AWC). The AWC will be used for calculating the Non-Growing Season Maximum Hydraulic Loading Rate and needs to be approved prior to Non-Growing Season application of wastewater.
CA-050-02M Prior to land applying	Update the “Cash Rent Farm Lease” to reflect the permit modification request for wastewater irrigation of process and condensate water during both growing and non-growing seasons. Also, ensure that the lease will be renewed timely, prior to expiration of the current lease (December 31, 2007). Submit the updates lease documents prior to the wastewater irrigation.
CA-050-03M Six months after permit modification issuance	Submit to DEQ for review and approval, an evaluation of the current groundwater well monitoring network. Determine whether the present monitoring wells provide adequate characterization of the site (specifically MU-005004 (Goitiandia) and MU-005005 (Gillette) sites). Prepare a report that discusses the evaluation and the proposal for modification/improvement of the monitoring network as needed.

F. Permit Modification Limits and Conditions

Category	Permit Modification Limits and Conditions
Type of Wastewater	Sugar Processing Wastewater
Application Site Area	MU-005004 (Goitiandia) and MU-005005 (Gillette)
Application Season	Growing Season (GS) and Non-growing Season (NGS)
Growing Season (GS)	Growing Season – Between April 01 through October 31 (214 days)
Non-growing Season (NGS)	Non-growing Season – Between November 01 through March 31 (151 days)
Reporting Year for Annual Loading Rates	The reporting year begins with the non-existing season and extends through the growing season of the following year –November 1 – October 31. For example, the 2004-2005 year was November 1, 2004 through October 31, 2005 or “2005 Reporting Year”
Growing Season Maximum Hydraulic Loading Rate (Applies to wastewater and supplemental irrigation water) ac-in / ac—yr or million gallons (MG)	<p>Growing Season (GS) Hydraulic Loading Rate shall be no greater than the Irrigation Water Requirement (IWR) using data from the tables of the following University Of Idaho web site: http://www.kimberly.uidaho.edu/water/appndxet/index.shtml. IWR is equal to the Mean IR data from these tables divided by the irrigation system efficiency.</p> <p>In lieu of these tables, current climatic and evaporation data, or 30-year average data may be used to calculate the IWR, as defined on page 5 of this permit. Assume no carryover soil moisture and a leaching rate of zero in calculating the IWR. Application shall generally follow consumptive use rates for the crop throughout the season.</p>
Non-Growing Season Maximum Hydraulic Loading Rate ac-in / ac—yr or million gallons (MG)	<p>The maximum NGS hydraulic rate is equal to: Soil AWC – Precipitation_{NGS} + Evapotranspiration_{NGS} for each hydraulic management unit (HMU) using the following values:</p> <p>Soil AWC: See Compliance Activity CA-050-01M Precip. NGS: 4.8 inches (Nov 1 through March 31) or site specific value if available ET NGS: 2.7 inches (Nov 1 through March 31) or site specific value if available</p>

F. Permit Modification Limits and Conditions

Category	Permit Modification Limits and Conditions
Maximum COD Loading, seasonal average in pounds/acre-day, each HMU	50 lb / acre-day seasonal average for growing season. 25 lb / acre-day seasonal average for the non-growing season.
Maximum Nitrogen Loading Rate, pounds/acre-year, each HMU (from all sources including waste solids and supplemental fertilizers)	150% of typical crop uptake (see definition) or UI Fertility Guide for growing season only 150 lb/ac during non-growing season only
Maximum Phosphorus Loading Rate, pounds/acre-year, each HMU (from all sources including waste solids and supplemental fertilizers)	150 lb/ac of typical crop uptake
Maximum Non-Volatile Dissolved (NVDS) Loading Rate, pounds/acre-year, each HMU	4000 lb/ac total (wastewater and supplemental water irrigation) 642 lb/ac during non-growing season (wastewater only)
Buffer Zones and Wellhead Protection	<p>All buffer zones must comply with, at minimum, local zoning ordinances. The following buffer zone distances shall be provided between the land application areas and the following:</p> <ul style="list-style-type: none"> • Inhabited Dwellings: 300 feet or more¹ • Public Access Areas: 50 feet or more • Natural Surface Waters: 100 feet or more • Man-made Surface Waters: 50 feet or more • Private Wells: 500 feet or more² • Public Water Supply Wells: 1,000 feet or more² • Irrigation and Monitoring Wells: 25 feet or more <p>1. Existing buffer zones for dwellings are allowed until final determination of buffer zones are made upon review and approval of the facility's buffer zone plan.</p> <p>2. Or as determined by Domestic Well Location Acceptability Analysis.</p> <p>If necessary, Best Management Practices (BMPs) to prevent runoff from the site shall be used in the buffer zones around all areas where runoff may potentially occur. New BMP's shall be reviewed and approved by DEQ prior to implementation.</p>

F. Permit Modification Limits and Conditions

Category	Permit Modification Limits and Conditions
	Berms and other BMPs shall be used to protect the well head of on-site wells.
Allowable Crops	Crops grown for direct human consumption (those crops that are not processed prior to consumption) are not allowed.

G. Monitoring Requirements

The Permittee shall monitor the operation of wastewater reuse and report data and calculations as per Schedule B of the permit and all applicable requirements included with subsequent Permit Modifications (Appendix B through C).

Additional Parameters Monitoring Table

Frequency	Monitoring Point	Description/Type of Monitoring	Parameters
Daily	Flow meter or Calibrated Pump Rate	Supplemental Irrigation Water	Volume (million gallons and acre-inches) to each HMU, record monthly and report annually.
Monthly	Each HMU	Calculate IWR for each crop type	Volume (million gallons and acre-inches) to each HMU, record monthly and report annually.

Appendix 1

Environmental Monitoring Serial Numbers

See Appendix “A” of the Permit for Environmental Serial Numbers for following:

- **HYDRAULIC MANAGEMENT UNITS**
- **WASTEWATER SAMPLING POINTS**
- **SOIL MONITORING UNITS**
- **GROUND WATER MONITORING**

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Appendix 2

Site Maps

Site maps available for public review at DEQ's Twin Falls Regional Office, 1363 Fillmore St.

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